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REMARKS

by

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at

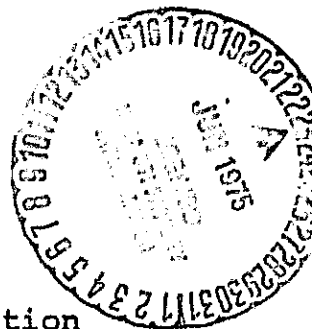
Baccalaureate Ceremonies
Rensselaer Polytechnic Institute

June 5, 1975

Just two weeks ago I saw a place I had wanted to visit for a long time: The Baykonur Cosmodrome, in the state of Kazakhstan in the Soviet Union. From here the first satellite had been launched on October 4, 1957, and the first man had left his home planet in April 1961. Until a month ago, no Americans had visited Baykonur, and even today those of us who have seen it are very few in number.

Why do I tell you this? Because it was at Baykonur that a new age dawned--the age of space. It dawned just 18 years ago, almost coincident with the time when those of you who will be graduating tomorrow started on the road to education.

I didn't go to Baykonur just to reminisce and see the sights; I went there for another purpose about which I



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will tell you later. But while I was there, I did see the sights, and I did reminisce. I saw a monument built to commemorate the launching of the first Sputnik, and the cottage where Gagarin slept the night before man first flew in space. And, of course, I started thinking about those past 18 years--the years of most of your lives, and the years of most of my professional career.

In looking back, there stands out one inescapable fact: these have been 18 years of remarkable technological achievement. In almost every other field, our Nation had its problems: the Bay of Pigs, three terrible assassinations, strife on college campuses, Watergate, and the war in Vietnam. But when history books are written, all of these will be overshadowed by a single event: man's first journey to another planet--man's first landing on the Moon.

Of course landing on the Moon was only one of many aspects of the space age. Space has brought us communications satellites to lower the barriers of ignorance; weather satellites to warn us of storms; resources satellites to help feed the hungry. Space has expanded the horizons of science, has brought us new fundamental knowledge about the Moon, the planets, the Sun, the stars, and the universe.

Finally, space is helping us find the answers to pressing questions about ourselves, and our place in the universe-- about our cosmic heritage, about what Carl Sagan (who will speak at tomorrow's commencement) calls the "Cosmic Connection."

But let me ask some down-to-earth questions: What made these achievements possible? How did we do the near-impossible, without too many failures, with a large measure of success? Or, let me put it another way: What did I learn as a student at RPI that allowed me to help make these events happen?

My answer may surprise you: I learned how to be inquisitive. I learned to be curious. I learned not to be afraid to ask questions.

Once a question is asked, once a problem is identified and clearly defined, a solution can always be found. In space we are successful because we are curious, because we look for answers. And whenever we did have a failure, the reason was always the same: We had failed to be inquisitive.

Let me give you just one example: Remember Apollo 13? The spaceship's oxygen tank exploded when we were half way

to the Moon, and we almost lost three men. Why? Because years before we had overlooked the obvious. Years before we had eliminated all ignition hazards and combustible materials from the space cabin with its oxygen atmosphere. But we were blind to the fact that there could also be a fire or explosion in the super-cold liquid oxygen storage tank. Nobody asked about the fire hazard inside a tank of liquid oxygen, and that's exactly where a fire started.

On Apollo 13, we were lucky: We lost the mission, but we saved the crew--just barely. However, most of the time we aren't just lucky, we are right; we are right because we are willing to be inquisitive.

Ask the right questions. This is the best, perhaps the only, advice I can give you; the only guide to success I can leave with you. And I am speaking not only to the engineers in the audience, I am speaking to all of you. Be curious, be inquisitive, don't be afraid to question. Keep asking until you are satisfied with the answer.

I just came from a question-asking session in the Soviet Union. We called it a flight readiness review. We examined the preparations for Apollo-Soyuz, our joint rendezvous and docking mission, and determined that we were on target for a mid-July launch.

Apollo-Soyuz is a very difficult and a very important step in space exploration. It is a pioneering venture of a different kind--pioneering in international cooperation. We are learning how to work with our chief competitor now to cooperate on a most complex project where the final report card will be visible to all; we are opening the door for many more cooperative efforts in the future.

Apollo-Soyuz is another step on the road to the stars, a step to help fill humanity's physical and spiritual need to explore; a step to help assure a peaceful, bright, and expanding future for your generation and for generations to come.

I spoke of the technological achievements of the past 18 years, the years of space. The next 18 years, and the years after that, are yours to explore, yours to fulfill with your energy and exuberance, inquisitiveness and daring, with inventiveness, initiative and a drive toward wider horizons. In short, they are yours to pioneer. I envy you, you are very lucky indeed.

Six weeks from today, we will witness a special moment in history: the moment when Soviet cosmonauts and American astronauts will shake hands, not on Earth, but in space.

I hope we have asked all of the right questions.
